Tanta University

Department: Computer and Control Engineering
Total Marks: 75 Marks

Faculty of Engineering

Course Title: Microprocessors
Date: January 2014(First term)

Course Code: CCE2108
Allowed time: 3 hrs

Year: 2nd
No. of Pages: (2)

Answer the following problems

Problem number (1) (18 Marks)

[a] Put (✓) or (x), then write correct statement (11Marks)

1) A bus is set of common connection lines that carry the same type of information.
2) In real mode, the code segment is limited to 64 Kbytes in 80386.
3) In real mode, segments can begin at any location in the memory system.
4) PUSH BX is equivalent to PUSH EBX
5) MOV CX, DL
6) STD
7) MOV CS, BX
8) PUSH 73_H
9) LES BX, CAT
10) LEA CX,[BL]
11) IN DX
12) REP STOSW
13) AND AL, BL

[b] Draw the internal architecture of the microprocessor 80286, then describe the use of all registers. (7 Marks)

Problem number (2) (17 Marks)

[a] For the following instructions determine the data addressing mode and define its function. (9 Marks)

1) MOV $[1234_H]$, BX
2) DIV CH
3) ADD CL, [BX + DI]
4) INC BYTE PTR[BX]
5) MOV ARRAY[BX], AX
6) MOV [BX], DH

[b] Comparison between: (8 Marks)

1) The real mode operation and the protected mode operation.
2) The 16-bit instruction mode and the 32-bit instruction mode.
3) LOOP instruction and JMP instruction.

Problem number (3) (20 Marks)

[a] In a machine language instruction, what is specified by the MOD field, the D and W bits found in some machine language instructions. (6 Marks)

[b] If a MOV SI, [BX +DI+ 20_H] instruction appears in a program, what is its machine language equivalent? (6 Marks)

Op-code MOV is 22_H			
R/M code	Addressing mode	Code	REG field
000	DS: [BX + SI]	011	BX
001	DS: [BX + DI]	110	SI
111	DS: [BX]	111	DI

[c] Describe the operation of each of the following instructions and the content of the BX in each instruction after execution assuming the initial values are DS = 0200_H, BX = $4F82_H$ (8 Marks)

1) INC BX
2) SUB BH, 20_H
3) ROR BX, 2 93 E0
4) AND BX,$F0FF_H$

Problem number (4) (20 Marks)

[a] Suppose that DS = 0400_H, BX = 0300_H, SS = 0200_H, SP = 0001_H, and DX= 0600_H. Determine the memory address accessed by each of the following instructions and its content, assuming real mode operation: (8 Marks)

1) MOV [0700_H], BX
2) PUSH BX
3) MOV [BX].DX
4) INC BYTE PTR[BX]

[b] Explain the meaning of the following instructions: (12 Marks)

1) . MODEL SMALL
2) PUSHA
3) MOV BX, OFFSET DATS
4) CMOVS BX, DX
5) OUT DX, AX
6) OUTSB
7) DATAS DW 20_H
8) MUL DI

مع أطيب الأمنيات بالتوفيق